

CLAIMS

1. A liquid composition which can undergo radicalic polymerization into organic glass comprising the following
5 components:

1) the product obtained from the transesterification of diallyl carbonate (A) with a blend of one or more linear or branched aliphatic diols (B), containing from three to ten carbon atoms in the molecule, with a linear or
10 branched aliphatic polyol (C), containing from four to twenty carbon atoms and from three to six hydroxyl groups in the molecule; said component 1) being present in an overall concentration ranging from 70 to 100% by weight with respect to the total weight of the mixture of components 1) and 2);
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2) one or more co-monomers of the acrylic, methacrylic, vinylic or allylic type and mixtures thereof, in an overall concentration ranging from 0 to 30% weight with respect to the total weight of the mixture of components
20 1) and 2);

3) a polymerization initiator or a mixture of two or more polymerization initiators, stable at room temperature, belonging to the group of peroxides, in an overall concentration ranging from 0.03 to 0.1 moles per 1 kg of final composition.
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2. The composition according to claim 1, characterized in that the molar ratio $A/(B+C)$ ranges from 2/1 to 5/1 and the amount of (C) in the mixture (B+C) is equal to or lower than 25% by weight on the total of said mixture (B+C).
3. The composition according to claim 1, characterized in that the molar ratio $A/(B+C)$ ranges from 2.5/1 to 4/1 and the amount of (C) in the mixture (B+C) ranges from 5% weight to 20% by weight on the total weight of said mixture (B+C).
4. The composition according to claim 1, characterized in that the diols (B) are diethylene glycol, triethylene glycol, tetraethylene glycol, 1,4-butanediol, 1,6-hexanediol, 1,3-propanediol, neopentyl glycol, dipropylene glycol, 2,2,4-trimethyl-1,3-pentanediol, 1,4-cyclohexane dimethanol.
5. The composition according to claim 4, characterized in that the diols are diethylene glycol and neopentyl glycol.
6. The composition according to claim 1, characterized in that the polyols (C) are pentaerythrite, trimethylol propane, dipentaerythrite, di-trimethylol propane, tris(hydroxy-ethyl) isocyanurate.
7. The composition according to claim 6, characterized in that the polyols (C) are pentaerythrite, trimethylol

propane.

8. The composition according to any of the previous claims, characterized in that component 1) is obtained starting from diallyl carbonate (A) and the mixture
5 (B+C), operating under transesterification conditions, at a temperature ranging from 80 to 160°C, in the presence of an alkaline-type catalyst, continuously eliminating the allyl alcohol which is formed as reaction by-product.

9. The composition according to claim 8, characterized
10 in that the transesterification is carried out at a temperature ranging from 90 to 130°C and the alkaline catalyst is selected from hydroxides, carbonates and alcoholates of alkaline metals, organic bases, basic ion exchange resins.

15 10. The composition according to claim 9, characterized in that the catalyst is selected from sodium hydroxide, sodium carbonate, sodium methyllate.

11. The composition according to any of the previous claims from 8 to 10, characterized in that the catalyst
20 is used in an amount at least equal to 1 ppm (parts per million by weight) with respect to the sum of the weights of components (B+C).

12. The composition according to claim 11, characterized in that the catalyst is used in amounts ranging from
25 0.01% to 0.3% weight.

13. The composition according to any of the previous claims from 8 to 12, characterized in that the transesterification reaction is carried out at pressure values ranging from 60 mbar to 1030 mbar and for reaction times
5 of between 0.5 and 20 hours.

14. The composition according to claim 13, characterized in that the transesterification reaction is carried out at pressure values ranging from 60 to 500 mbar.

15. The composition according to claim 13, characterized
10 in that the transesterification reaction is carried out with reaction times ranging from 0.5 to 3 hours.

16. The composition according to claim 1, characterized in that component 2) is selected from methyl methacrylate, vinyl acetate, vinyl esters of versatic acids 9 and
15 10 known on the market as VeoVa 9 and VeoVa 10, triallyl cyanurate, triallyl isocyanurate, diallyl maleate, diallyl fumarate, diallyl isophthalate, diallyl terephthalate and mixtures thereof.

17. The composition according to claim 1, characterized
20 in that component 2) is present in an overall concentration ranging from 1 to 20% weight in the mixture of Components 1) and 2).

18. The composition according to claim 1, characterized in that component 3) is selected from peroxides having a
25 storage temperature not lower than +15°C.

19. The composition according to claim 1, characterized in that the peroxides are selected from dialkyl-peroxy-dicarbonates, diacyl-peroxides and/or perketals.
20. The composition according to claim 19, characterized in that the dialkyl-peroxy-dicarbonates are di(4-t-butyl-cyclohexyl)peroxy-dicarbonate and dimyristyl-peroxy-dicarbonate.
21. The composition according to claim 19, characterized in that the dialkyl-peroxy-dicarbonate is di(4-t-butyl-cyclohexyl)peroxy-dicarbonate (BCHPC).
22. The composition according to claim 19, characterized in that the diacyl-peroxides are dibenzoyl-peroxide, didecanoyl peroxide and dilauroyl peroxide.
23. The composition according to claim 19, characterized in that the diacyl-peroxide is dibenzoyl-peroxide.
24. The composition according to claim 19, characterized in that the perketals are 1,1-di(t-butyl peroxy) cyclohexane, 1,1-di(t-butyl peroxy)3,3,5 trimethyl cyclohexane, 1,1-di(t-amyl peroxy) cyclohexane.
25. The composition according to claim 19, characterized in that the perketal is 1,1-di(t-amyl peroxy) cyclohexane.
26. The composition according to claim 1, characterized in that, when component 2) is absent, the diacyl peroxides and/or perketals are used in combination with dial-

kyl peroxy dicarbonates.

27. The composition according to any of the previous claims, characterized in that it contains one or more conventional additives, such as antioxidants, light stabilizers, lubricants, dyes, pigments, UV-absorbers, IR-absorbers, and similar, in a total amount in any case not higher than 1 part by weight for every 100 parts by weight of the compositions.

28. The composition according to any of the previous claims, characterized in that it is transformed into the relevant organic glass by operating at a temperature ranging from 30 to 120°C, with polymerization times varying from 1 hour to 100 hours.

29. Organic glass obtainable by the polymerization of a composition according to any of the previous claims.

30. Ophthalmic lenses, sun glasses, protective shields, display windows, manifolds and solar and photovoltaic panels, substrates for optical disks, display panels and video-terminals which can be obtained by the processing of the organic glass according claim 29.